

Checklist of green algae (Chlorophyta) for the state of Mato Grosso, Central Brazil

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ABSTRACT: A checklist of Chlorophyta species was made from a bibliographic database in order to contribute to the knowledge of the biodiversity of algae in the state of Mato Grosso. The list records 563 species of the phylum Chlorophyta distributed in 105 genera, 38 families, 21 orders and seven classes. The class Zygnematophyceae has 386 species (16% of families), followed by Chlorophyceae with 154 species (55% of families). The other classes together contributed with 23 species (29% of families). The contributions of Desmidiaceae (52%), Closteriaceae (9%), Scenedesmaceae (9%) and Oocystaceae (5%) were noteworthy; the others were composed of no more than thirty species (25%). The genera with the highest number of species were *Cosmarium* (82 species), *Staurostrum* (55 species) and *Closterium* (53 species). This checklist of Chlorophyta corroborates the studies that highlight the high degree of richness of this phylum in the aquatic systems of Brazil.

INTRODUCTION

The biodiversity of flora in the state of Mato Grosso, despite being very rich remains poorly explored by surveys and, although lists of algae exist, the variety of species is far from being adequately assessed. Moreover, knowledge is concentrated in only a few geographical areas, such as the Pantanal (Junk *et al.*, 2006).

Studies that provide references for Chlorophyta species in the different aquatic systems of Mato Grosso are rare. The first studies were by Braun and Nordstedt (1883), Bohlin (1897), Hirn (1900), Schmidle (1901), Borge (1903, 1925), followed by Dias (1986, 1989), Sophia and Silva (1989), De-Lamônica-Freire (1985, 1989a, b, 1992a, b), De-Lamônica-Freire and Sant'anna (1993) and Schults and De-Lamônica-Freire (2000).

The lack of surveys on the actual phycological composition of Mato Grosso and the dispersed way in which data has been made known, suggests the need for a species checklist of Chlorophyta, in order to contribute to the knowledge of the biodiversity of algae.

MATERIALS AND METHODS

We conducted an inventory of Chlorophyta and organized a database from the literature review related to ecological, taxonomic and floristic studies containing lists of species cited for lotic and lentic environments of Mato Grosso, central Brazil.

Fourteen periodicals were accessed in addition to “unpublished data” from two theses, three dissertations and three undergraduate dissertations, totaling 24 studies. The use of this type of literature was necessary since it corresponds to one third of the work on Chlorophyta of the state of Mato Grosso and, if it were not considered, the final list would be reduced by about 40% in the total number of taxa.

In order to place the species in the phylum Chlorophyta, the catalog of taxonomic classification proposed by

Ruggiero *et al.* (2011) was adopted. Only taxa identified to species level were included.

RESULTS AND DISCUSSION

Algae of the Phylum Chlorophyta were represented by 563 species distributed among 105 genera, 38 families and 21 orders, belonging to seven classes (Table 2). The study of De-Lamônica-Freire (1989a, b) had already cataloged 430 Chlorophyta taxa for the state. Dias (1989) cited 12 species of filamentous Chlorophyta for one of the municipalities in Mato Grosso. In the latest compilation made by Bicudo and Menezes (2010), 160 taxa of epicontinental algae were listed for the state of Mato Grosso.

Chlorophyta commonly exhibits a high degree of richness in the aquatic systems of Brazil, especially the class Zygnematophyceae (Severiano *et al.*, 2012). In their study, De-Lamônica-Freire (1989a, b) listed 333 taxa for the class Zygnematophyceae, 76 for Chlorophyceae and 21 for the remaining classes. For the floodplain of the Pantanal, Heckman *et al.* (1993) and Loverde-Oliveira and Figueiredo (2009) pointed out that phytoplankton were better represented, in terms of number of species, by Chlorophyta, especially the classes Chlorophyceae and Zygnematophyceae. These two classes were considered by Loverde-Oliveira *et al.* (2011) as responsible for the greatest biodiversity of phytoplanktonic algae in northern Pantanal.

Considering the classes attributed to Mato Grosso (Table 2), the group Zygnematophyceae was the most representative with 386 species (16% of the families), followed by Chlorophyceae with 154 species (55% of the families). The other classes (Charophyceae, Klebsormidiophyceae, Mesostigmatophyceae, Trebouxiophyceae and Ulvophyceae) contributed together with 23 species (29% of the families).

Among the genera of Zygnematophyceae that contribute most to the total number of species are *Cosmarium* Corda

ex Ralfs (82 species), *Staurostrum* Meyen *ex* Ralfs (55 species) and *Closterium* Nitzsch *ex* Ralfs (53 species) (Table 1). The genera *Cosmarium* and *Staurostrum* were also reported by Schults and De-Lamônica-Freire (2000) and Camargo *et al.* (2009) as predominant, demonstrating the wide occurrence of these taxa in the algal flora.

The families with the highest number of taxa listed were Desmidiaceae (52%), Closteriaceae (9%), Scenedesmaceae (9%) and Oocystaceae (5%). The other families were composed of no more than thirty species

(25%), according to Table 1. A total of 291 species of Desmidiaceae were recorded. De-Lamônica-Freire (1992a) cited 10 Desmidiaceae taxa, while Schults and De-Lamônica-Freire (2000) and Camargo *et al.* (2009) identified 44 and 47 taxa, respectively, for this family. Thus, the checklist of Chlorophyta corroborates the studies that emphasize the high degree of richness of this phylum in the aquatic systems of Brazil and extends the list of species of Chlorophyta recorded in different types of environments in the state of Mato Grosso.

TABLE 1. Checklist of algae from Phylum Chlorophyta recorded for the state of Mato Grosso, Brazil.
References: 1) Braun and Nordstedt (1883); 2) Bohlin (1897); 3) Hirn (1900); 4) Schmidle (1901); 5) Borge (1903); 6) Borge (1925); 7) De-Lamônica-Freire (1985); 8) Dias (1986); 9) Dias (1989); 10) Sophia and Silva (1989); 11) De-Lamônica-Freire (1989a); 12) De-Lamônica-Freire (1989b); 13) De-Lamônica-Freire (1992a); 14) De-Lamônica-Freire (1992b); 15) De-Lamônica-Freire and Sant’Anna (1993); 16) Schults (1993); 17) Azevedo (1996); 18) Schults (1998); 19) Loverde-Oliveira (1999); 20) Schults and De-Lamônica-Freire (2000); 21) Messias (2002); 22) Marçal (2005); 23) Figueiredo (2007); 24) Camargo *et al.* (2009).

Phylum Chlorophyta A.Pascher, 1914	References
Class Charophyceae	
Order Not assigned	
Family Characiaceae	
<i>Characium salinum</i> Ivanow	6, 11
Order Charales	
Family Characeae	
<i>Chara martiana</i> Braun	1, 11
<i>Nitella acuminata</i> Braun ex Wallman	1, 11
Class Chlorophyceae	
Order Not assigned	
Family Not assigned	
<i>Gymnozyga moniliformis</i> Ehrenberg	5, 12
<i>Octacanthium mucronulatum</i> (Nordstedt) Compère	24
Family Coelastraceae	
<i>Eutetramorus fottii</i> (Hindák) Komárek	15, 22
<i>Eutetramorus planctonicus</i> (Koršíkov) Bourrelly	15
Family Radiococcaceae	
<i>Coenocystis subcylindrica</i> Koršíkov	22
Order Chaetophorales	
Family Chaetophoraceae	
<i>Aphanochaete vermicularis</i> Wolle	6, 11
<i>Stigeoclonium farctum</i> Berthold	9
<i>Stigeoclonium tenue</i> (Agardh) Kützing	11, 9
<i>Stigeoclonium thermale</i> Braun in Kützing	11
Family Schizomeridaceae	
<i>Schizomeris leibleinii</i> Kützing	9
Order Chlorococcales	
Family Not assigned	
<i>Characiochloris characioides</i> Pascher	18
<i>Coenochloris helvetica</i> Hindák	23
<i>Coenochloris planoconvexa</i> Hindák	15
<i>Radiococcus nimbatus</i> (De Wildeman) Schmidle	22
<i>Sphaerobotrys fluviatilis</i> Butcher	18
Family Chlorococcaceae	
<i>Ankyra ancora</i> (G.M.Smith) Fott	23
<i>Ankyra judayi</i> (G.M.Smith) Fott	19
<i>Schroederia indica</i> Philipose	23
<i>Schroederia setigera</i> (Schröder) Lemmermann	23
<i>Schroederia spiralis</i> (Printz) Koršíkov	23
<i>Tetraëdron bifurcatum</i> (Wille) Lagerheim	6, 11
<i>Tetraëdron caudatum</i> (Corda) Hansgirg	23
<i>Tetraëdron gracile</i> (Reinsch) Hansgirg	23
<i>Tetraëdron minimum</i> (Braun) Hansgirg	2, 11, 23
<i>Tetraëdron regulare</i> Kützing	2, 11
<i>Tetraëdron triangulare</i> Koršíkov	23

TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
Family Dictyosphaeriaceae	
<i>Botryococcus braunii</i> Kützing	11, 22, 23, 6
<i>Dictyosphaerium ehrenbergianum</i> Nägeli	11, 2, 22, 23, 19
<i>Dictyosphaerium elegans</i> Bachmann	15, 22
<i>Dictyosphaerium pulchellum</i> Wood	15, 11, 2, 22, 23
<i>Dictyosphaerium tetrachotomum</i> var. <i>fallax</i> Komárek	23
<i>Dimorphococcus lunatus</i> Braun	15, 11, 2, 6
Family Hydrodictyaceae	
<i>Paradoxia multiseta</i> Svirenko	23
<i>Pediastrum duplex</i> Meyer	11, 22, 23
<i>Pediastrum tetras</i> (Ehrenberg) Ralfs	15, 11, 2, 22, 23, 6
<i>Selenosphaerium americanum</i> Bohlin	11, 2
<i>Sorastrum americanum</i> (Bohlin) Schmidle	15, 11, 6
<i>Sorastrum crassispinosum</i> (Hansgirg) Bohlin	11, 2, 6
<i>Sorastrum spinulosum</i> Nägeli	15, 2
Family Micractiniaceae	
<i>Golenkinia paucispina</i> West and G.S.West	15
<i>Golenkinia radiata</i> Chodat	23
<i>Micractinium pusillum</i> Fresenius	23
Family Oocystaceae	
<i>Kirchneriella contorta</i> var. <i>elongata</i> (G.M.Smith) Komárek	22
<i>Kirchneriella diana</i> e (Bohlin) Comas González	22
<i>Kirchneriella lunaris</i> (Kirchner) Möbius	2, 11, 22, 23
<i>Kirchneriella obesa</i> (West) West and G.S.West	23
<i>Monoraphidium caribeum</i> Hindák	23
<i>Monoraphidium contortum</i> (Thuret) Komárková-Legnerová	22, 23, 19
<i>Monoraphidium convolutum</i> (Corda) Komárková-Legnerová	23
<i>Monoraphidium griffithii</i> (Berkeley) Komárková-Legnerová	23
<i>Monoraphidium komarkovae</i> Nygaard	23, 19
<i>Monoraphidium minutum</i> (Nägeli) Komárková-Legnerová	22, 23, 19
<i>Monoraphidium tortile</i> (West and West) Komárková-Legnerová	22, 23
<i>Nephrocytium agardhianum</i> Nägeli	15, 23
<i>Nephrocytium alantoideum</i> Bohlin	11, 2
<i>Nephrocytium obesum</i> West and G.S.West	2
<i>Oocystis borgei</i> Snow	15
<i>Oocystis elliptica</i> W.West	23
<i>Oocystis lacustris</i> Chodat	15, 22, 23
<i>Oocystis naegeli</i> i Braun	2
<i>Oocystis solitaria</i> Wittrock	11, 2
<i>Oonephris obesa</i> (West and G.S.West) Fott	15
<i>Pilidiocystis endophytica</i> Bohlin	2
<i>Planktosphaeria gelatinosa</i> G.M.Smith	15
<i>Quadrigula closterioides</i> (Bohlin) Printz	23
<i>Quadrigula lacustris</i> (Chodat) G.M.Smith	23
<i>Quadrigula sabulosa</i> Hindák	23
<i>Raphidium convolutum</i> (Corda) Komárková-Legnerová	2
<i>Raphidium polymorphum</i> Fresenius	2
<i>Selenastrum bibraianum</i> Reinsch	11, 6
<i>Selenastrum gracile</i> Reinsch	11, 2, 6
<i>Selenastrum rinoi</i> Komárek and Comas	15
<i>Selenoderma malmeana</i> Bohlin	11, 2
Family Scenedesmaceae	
<i>Coelastrum cambricum</i> Archer	11, 23, 6
<i>Coelastrum astroideum</i> De Notaris	23
<i>Coelastrum indicum</i> Turner	22, 23
<i>Coelastrum microporum</i> Nägeli	11, 2, 23, 6
<i>Coelastrum proboscideum</i> Bohlin	11, 2, 22
<i>Coelastrum pseudomicroporum</i> Koršikov	15
<i>Coelastrum pulchrum</i> Schmidle	2, 11, 22, 15



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Coelastrum reticulatum</i> (Dangeard) Senn	22, 23
<i>Coelastrum sphaericum</i> Nägeli	11, 2
<i>Crucigenia fenestrata</i> (Schmidle) Schmidle	22
<i>Crucigenia quadrata</i> Morren	22
<i>Crucigenia tetrapedia</i> (Kirchner)	23, 19
<i>Crucigenia apiculata</i> (Lemmermann) Schmidle	23
<i>Crucigeniella crucifera</i> (Wolle) Komárek	22
<i>Crucigeniella fenestrata</i> (Schmidle) Schmidle	23
<i>Elakatothrix lacustris</i> Koršikov	23
<i>Scenedesmus acuminatus</i> (Lagerheim) Chodat	15, 22, 23
<i>Scenedesmus acutiformis</i> Schröder	11, 6
<i>Scenedesmus acutus</i> Meyen	15, 11, 2, 22, 23
<i>Scenedesmus armatus</i> (Chodat) Chodat	15
<i>Scenedesmus alternans</i> Reinsch	22, 23
<i>Scenedesmus bicaudatus</i> (Hansgirg) Chodat	23
<i>Scenedesmus bijuga</i> (Turpin) Kützing	23, 6
<i>Scenedesmus bijugatus</i> Kützing	11
<i>Scenedesmus bijugus</i> (Turpin) Lagerheim	15, 11, 2
<i>Scenedesmus brasiliensis</i> Böhlin	11, 2, 6
<i>Scenedesmus brevispina</i> (G.M.Smith) Chodat	15
<i>Scenedesmus caribeanus</i> Komárek	15
<i>Scenedesmus caudata</i> Corda	2
<i>Scenedesmus caudatus</i> Corda	11
<i>Scenedesmus curvatus</i> Bohlin	11, 6
<i>Scenedesmus denticulatus</i> Lagerheim	11, 6
<i>Scenedesmus dimorphus</i> (Turpin) Kützing	11, 6
<i>Scenedesmus ecornis</i> (Ehrenberg) Chodat	22, 23
<i>Scenedesmus ellipticus</i> Corda	22, 19
<i>Scenedesmus incrassatulus</i> Bohlin	11, 2
<i>Scenedesmus intermedius</i> Chodat	19
<i>Scenedesmus granulatus</i> West and G.S. West	15
<i>Scenedesmus hystrix</i> Lagerheim	15, 2
<i>Scenedesmus maximus</i> (West and G.S.West) Chodat	7
<i>Scenedesmus obliquus</i> (Turpin) Kützing	11, 6
<i>Scenedesmus opoliensis</i> Richter	15
<i>Scenedesmus perforatus</i> Lemmermann	22
<i>Scenedesmus quadricauda</i> Chodat	11, 15, 23
<i>Scenedesmus spinosus</i> Chodat	23
<i>Staurogenia emarginata</i> West and G.S. West	11
<i>Staurogenia rectangularis</i> Nägeli	11
<i>Tetrastrum glabrum</i> (Roll) Ahlstrom and Tiffany	19
<i>Tetrastrum punctatum</i> (Schmidle) Ahlstrom and Tiffany	22
Order Microsporales	
Family Microsporaceae	
<i>Microspora amoena</i> (Kützing) Rabenhorst	11, 6
<i>Microspora tumidula</i> Hazen	9
<i>Microspora willeana</i> Lagerheim	9
<i>Microspora wittrockii</i> (Wille) Lagerheim	11, 6
Order Phaeophilales	
Family Phaeophilaceae	
<i>Ectochaete endophyta</i> (Möbius) Wille	18
Order Prasiolales	
Family Prasiolaceae	
<i>Prasiola velutina</i> (Lyngbye) Trevisan	18
Order Oedogoniales	
Family Oedogoniaceae	
<i>Bulbochaete doliiformis</i> Borge	11, 6
<i>Oedogonium arcyosporum</i> Nordstedt	11, 3
<i>Oedogonium areolatum</i> Lagerheim	11, 6



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Oedogonium argenteum</i> Hirn	11, 3
<i>Oedogonium biforme</i> Nordstedt	11
<i>Oedogonium crassum</i> (Hassall) Wittrock	11, 6
<i>Oedogonium crenulato-costatum</i> Wittrock	11, 6
<i>Oedogonium crispum</i> (Hassall) Wittrock	11, 3
<i>Oedogonium dictyosporum</i> Wittrock	11, 6
<i>Oedogonium hoehnei</i> Borge	11, 6
<i>Oedogonium lageniforme</i> Hirn	11, 3, 6
<i>Oedogonium landsboroughii</i> (Hassall) Wittrock	11, 3
<i>Oedogonium pringsheimii</i> Cramer	11, 6
<i>Oedogonium pusillum</i> Kirchner	11
<i>Oedogonium reinschii</i> Roy	11, 9, 6
<i>Oedogonium sol</i> Hirn	11, 3
<i>Oedogonium tapeinosporum</i> Wittrock	11, 3
Order Tetrasporales	
Family Gloeocystaceae	
<i>Chaetopeltis minor</i> Möbius	11
<i>Tetrasporidium javanicum</i> Möbius	18
Family Palmellaceae	
<i>Palmella mucosa</i> Kützing	11, 2
<i>Sphaerocystis schroeteri</i> Chodat	23
Order Volvocales	
Family Goniaceae	
<i>Gonium pectorale</i> Müller	2
Family Chlamydomonadaceae	
<i>Protococcus viridis</i> Agardh	18
Family Volvocaceae	
<i>Eudorina elegans</i> Ehrenberg	11, 23, 6
<i>Pandorina morum</i> Müller	11, 2, 22, 23, 6
<i>Volvox aureus</i> Ehrenberg	2, 23
Class Klebsormidiophyceae	
Order Not assigned	
Family Not assigned	
<i>Heterothrichopsis viridis</i> (Iyengar and Kanthamma) Iyengar and Kanthamma	18
Order Coleochaetales	
Family Coleochaetaceae	
<i>Coleochaete irregularis</i> Pringsheim	11
Class Mesostigmatophyceae	
Order Chaetosphaeridiales	
Family Chaetosphaeridiaceae	
<i>Chaetosphaeridium pringsheimii</i> Klebahn	11
Class Trebouxiophyceae	
Order Chlorellales	
Family Chlorellaceae	
<i>Ankistrodesmus bibraianus</i> (Reinsch) Koršikov	22
<i>Ankistrodesmus gracilis</i> (Reinsch) Koršikov	22
<i>Ankistrodesmus densus</i> Koršikov	15
<i>Ankistrodesmus falcatus</i> (Corda) Ralfs	11, 22, 23, 6
<i>Ankistrodesmus fusiformis</i> Corda ex Koršikov	15, 22
<i>Closteriopsis longissima</i> (Lemmermann) Lemmermann	23
Order Oocystales	
Family Eremosphaeraceae	
<i>Eremosphaera viridis</i> De Bary	11
Order Not assigned	
Family Not assigned	
<i>Actinastrum aciculare</i> Playfair	22, 23
<i>Actinastrum hantzschii</i> Lagerheim	22, 23
Class Ulvophyceae	



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
Order Cladophorales	
Family Cladophoraceae	
<i>Pithophora oedogonia</i> (Montagne) Wittrock	18
<i>Pithophora sumatrana</i> Schmidle	11
Order Trentepohliales	
Family Trentepholiaceae	
<i>Trentepohlia abietina</i> (Flotow) Hansgirg	18
<i>Trentepohlia arborum</i> (Agardh) Hariot	18
Order Ulotrichales	
Family Ulotrichaceae	
<i>Geminella spiralis</i> (Chodat) G.S.Smith	18
<i>Hormidiella parvula</i> Iyengar and Kanthamna	18
<i>Ulothrix tenerrima</i> (Kützing) Kützing	11, 22, 6
<i>Ulothrix zonata</i> (Weber and Mohr) Kützing	18
Class Zygnematophyceae	
Order Zygnematales	
Family Closteriaceae	
<i>Closterium abruptum</i> W. West	4, 12
<i>Closterium acerosum</i> Ehrenberg ex Ralfs	21, 6, 5, 12
<i>Closterium aciculare</i> T. West	21, 22
<i>Closterium acutum</i> (Lyngbye) Brébisson	22, 23
<i>Closterium angustatum</i> Kützing ex Ralfs	7
<i>Closterium archerianum</i> Cleve	7
<i>Closterium baillyanum</i> (Brébisson ex Ralfs) Brébisson	21
<i>Closterium braunii</i> Reinsch	6, 12
<i>Closterium brebissonii</i> Meneghini	6, 12
<i>Closterium closterioides</i> (Ralfs) Louis and Peeters	7
<i>Closterium cornu</i> Ehrenberg ex Ralfs	4, 12
<i>Closterium cucumis</i> Ehrenberg	4, 12
<i>Closterium cynthia</i> De Notaris	5, 12
<i>Closterium diana</i> e Ehrenberg ex Ralfs	17, 7
<i>Closterium eboracense</i> Turner	21
<i>Closterium ehrenbergii</i> Meneghini	21, 6, 12, 22
<i>Closterium gracile</i> Brébisson	5, 12, 22, 23
<i>Closterium jenneri</i> Ralfs	6, 12
<i>Closterium kuetzingii</i> Brébisson	4, 6, 7, 12, 24
<i>Closterium lagoense</i> Nordstedt	7
<i>Closterium leibleinii</i> Kützing	21, 6, 12
<i>Closterium libellula</i> Focke	6, 12
<i>Closterium lineatum</i> Ehrenberg ex Ralfs	22
<i>Closterium lunula</i> Ehrenberg and Hemprich ex Ralfs	21
<i>Closterium macilentum</i> Brébisson	21
<i>Closterium malmei</i> Borge	7, 21, 6, 12
<i>Closterium moniliferum</i> (Bory) Ehrenberg	21, 6, 12
<i>Closterium monotaenium</i> W.Archer	21
<i>Closterium nasutum</i> Nordstedt	7, 6, 12
<i>Closterium navicula</i> (Brébisson) Lütkemüller	6, 12
<i>Closterium nematodes</i> Joshua	21
<i>Closterium obtusum</i> Brébisson	5, 12
<i>Closterium parvulum</i> Nägeli	6, 4, 5, 12
<i>Closterium perminutum</i> Borge	6, 12
<i>Closterium porrectum</i> Nordstedt	6, 5, 12
<i>Closterium praelongum</i> Brébisson	6, 5, 12
<i>Closterium pritchardianum</i> Archer	7
<i>Closterium pseudodecoratum</i>	21
<i>Closterium pseudodiana</i> e Roy	6, 12
<i>Closterium pseudolunula</i> Borge	21
<i>Closterium pusillum</i> Hantzsch	6, 5, 12
<i>Closterium pygmaeum</i> Gutwinski	6, 12



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Closterium ralfsii</i> Brébisson ex Ralfs	7
<i>Closterium regulare</i> Brébisson	21, 22
<i>Closterium rostratum</i> Ehrenberg ex Ralfs	4, 12
<i>Closterium setaceum</i> Ehrenberg	19, 21, 6, 12, 22, 23
<i>Closterium strigosum</i> Brébisson	4, 12
<i>Closterium striolatum</i> Ehrenberg	5
<i>Closterium subcostatum</i> Nordstedt	6, 12
<i>Closterium tortum</i> Griffiths	21
<i>Closterium tumidum</i> Johnson	6, 5, 12
<i>Closterium turgidum</i> Ehrenberg	6, 5, 12
<i>Closterium venus</i> Kützing	6, 5, 12
Family Desmidiaceae	
<i>Actinotaenium turgidum</i> (Brébisson) Teiling	7
<i>Actinotaenium wollei</i> (West and G.S.West) Teiling	7, 18
<i>Arthrodesmus convergens</i> Ehrenberg	6, 4, 12
<i>Arthrodesmus incus</i> (Brébisson) Hassal	6, 12
<i>Arthrodesmus longispinus</i> Borge	16, 5, 12, 20
<i>Arthrodesmus maximus</i> Borge	6, 12
<i>Arthrodesmus mucronulatus</i> Nordstedt	6, 5, 7, 12, 16, 20
<i>Arthrodesmus subulatus</i> Kützing	6, 5, 12
<i>Arthrodesmus tenuissimus</i> Archer	21
<i>Arthrodesmus westii</i> Förster	17
<i>Bambusina borrieri</i> (Ralfs) Cleve	22, 24
<i>Cosmarium abruptum</i> Lundell	17
<i>Cosmarium baileyi</i> Wolle	5, 12
<i>Cosmarium bipunctatum</i> Börgesen	6, 12
<i>Cosmarium bireme</i> Nordstedt	6, 12
<i>Cosmarium boeckii</i> Wille	21
<i>Cosmarium brebissonii</i> Meneghini	6, 12
<i>Cosmarium calcareum</i> Wittrock	12
<i>Cosmarium candianum</i> Delponte	7
<i>Cosmarium clepsydra</i> Nordstedt	6, 12
<i>Cosmarium commissurale</i> Brébisson	22, 20
<i>Cosmarium commissurale</i> var. <i>crassum</i> Nordstedt	6, 7, 12, 16, 24
<i>Cosmarium connatum</i> Brébisson ex Ralfs	18
<i>Cosmarium conspersum</i> Ralfs	6, 5, 12
<i>Cosmarium contractum</i> Kirchner	18, 6, 12
<i>Cosmarium cucurbita</i> Brébisson	6, 12
<i>Cosmarium decedens</i> (Reinsch) Raciborski	7
<i>Cosmarium denticulatum</i> Borge	6, 7, 12, 22, 23, 24
<i>Cosmarium depressum</i> (Nägeli) Lundell	17, 7
<i>Cosmarium difficile</i> Lütkenmüller	12, 6
<i>Cosmarium elfvingii</i> Raciborski	4, 12
<i>Cosmarium excavatum</i> Nordstedt	6, 12
<i>Cosmarium exiguum</i> Archer	7
<i>Cosmarium galeritum</i> Nordstedt	16, 17, 7
<i>Cosmarium galiciense</i> (Gutwinski) De-Lamonica-Freire	7, 17
<i>Cosmarium ginzbergeri</i> Grönblad	7
<i>Cosmarium granatum</i> Brébisson ex Ralfs	21, 5
<i>Cosmarium hammeri</i> Reinsch	4, 5, 12
<i>Cosmarium hexagonum</i> Nordstedt	7
<i>Cosmarium impressulum</i> Elfving	17, 7
<i>Cosmarium labiatum</i> Borge	5, 12
<i>Cosmarium laeve</i> Rabenhorst	6, 12
<i>Cosmarium laticollum</i> Delponte	5, 12
<i>Cosmarium lobatum</i> Börgesen	6, 12
<i>Cosmarium mamilliferum</i> Nordstedt	6, 12
<i>Cosmarium mammillatum</i> Borge	5, 12
<i>Cosmarium margaritatum</i> (Lundell) Roy and Bisset	20



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Cosmarium meneghinii</i> Brébisson	6, 5, 12
<i>Cosmarium moerlianum</i> Lütkemüller	7
<i>Cosmarium moniliforme</i> (Turpin) Ralfs	6, 5, 12
<i>Cosmarium naegelianum</i> Brébisson	4, 12
<i>Cosmarium norimbergense</i> Reinsch	6, 12
<i>Cosmarium obsoletum</i> (Hantzsch) Reinsch	6, 22, 12
<i>Cosmarium obtusatum</i> Schmidle	16, 17, 7, 20, 24
<i>Cosmarium ordinatum</i> (Börgeesen) West	6, 12
<i>Cosmarium ornatum</i> Ralfs	4, 5, 12
<i>Cosmarium pachydermum</i> Lundell	5, 12, 23
<i>Cosmarium paraguayense</i> Borge	7, 22
<i>Cosmarium phaseolus</i> Brébisson	6, 12
<i>Cosmarium pilgeri</i> Schmidle	4, 12
<i>Cosmarium polymorphum</i> Nordstedt	6, 5, 12
<i>Cosmarium porrectum</i> Nordstedt	6, 5, 12
<i>Cosmarium pseudoconnatum</i> Nordstedt	5, 6, 7, 12, 16, 20, 24
<i>Cosmarium pseudogranatum</i> Nordstedt	6, 12
<i>Cosmarium pseudopyramidatum</i> Lundell	5, 6, 22, 12
<i>Cosmarium pseudoprotuberans</i> Kirchner	7
<i>Cosmarium pseudotaxichondrum</i> Nordstedt	5, 12
<i>Cosmarium pulcherrimum</i> Nordstedt	12, 6
<i>Cosmarium punctulatum</i> Brébisson	4, 12
<i>Cosmarium pyramidatum</i> Brébisson	4, 5, 12, 24
<i>Cosmarium quadrum</i> Lundell	22
<i>Cosmarium rectangulare</i> Grunow	6, 7, 12, 24
<i>Cosmarium redimitum</i> Borge	6, 22, 12
<i>Cosmarium refringens</i> Taylor	7
<i>Cosmarium regnellii</i> Wille	5, 6, 12, 24
<i>Cosmarium regnesi</i> Reinsch	12
<i>Cosmarium reniforme</i> (Ralfs) Archer	24
<i>Cosmarium retusiforme</i> (Wille) Gutwinski	4, 12
<i>Cosmarium simulum</i> Borge	5, 12
<i>Cosmarium staurastroides</i> Eichler and Gutwinski	6
<i>Cosmarium subalatum</i> West	6, 12
<i>Cosmarium subcucumis</i> Schmidle	17
<i>Cosmarium subpunctulatum</i> Nordstedt	4, 12
<i>Cosmarium subspeciosum</i> Nordstedt	21, 6, 5, 22, 12
<i>Cosmarium subtumidum</i> Nordstedt	7
<i>Cosmarium supraspeciosum</i> Wolle	7
<i>Cosmarium tinctum</i> Ralfs	5, 12
<i>Cosmarium triangulare</i> Borge	7, 24
<i>Cosmarium trilobulatum</i> Reinsch	5, 7, 12, 24
<i>Cosmarium trinodulum</i> Nordstedt	4
<i>Cosmarium urnigerum</i> Nordstedt	16, 7,20
<i>Cosmarium variolatum</i> Lundell	4, 12
<i>Cosmarium vitiosum</i> Scott and Grönblad	16, 17, 7, 20
<i>Desmidium aequale</i> West and G.S.West	7, 13
<i>Desmidium aptogonum</i> Brébisson	6, 12
<i>Desmidium baileyi</i> (Ralfs) Nordstedt	21, 6, 5, 12
<i>Desmidium cylindricum</i> Greville ex Nordstedt	6, 5, 22, 12
<i>Desmidium graciliceps</i> (Nordstedt) Lagerheim	6, 4, 5, 12, 23, 20
<i>Desmidium grevillei</i> (Kützing ex Ralfs) De Bary	10, 22
<i>Desmidium laticeps</i> Nordstedt	21, 12, 6
<i>Desmidium pseudostreptonema</i> West and G.S.West	10
<i>Desmidium quadratum</i> Nordstedt	20
<i>Desmidium swartzii</i> Agardh ex Ralfs	21
<i>Euastrum abruptum</i> Nordstedt	6, 5, 12, 23
<i>Euastrum ansatum</i> Ehrenberg ex Ralfs	5, 6, 22, 12, 20
<i>Euastrum attenuatum</i> Wolle	16, 7, 20



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Euastrum binale</i> (Turpin) Ehrenberg	6, 5, 12
<i>Euastrum brasiliense</i> Borge	5, 12
<i>Euastrum breviceps</i> Nordstedt	6, 5, 12
<i>Euastrum denticulatum</i> Gay	5, 6, 12, 24
<i>Euastrum divergens</i> Joshua	22
<i>Euastrum dubium</i> Nägeli	22
<i>Euastrum elegans</i> (Brébisson) Kützing	17, 19, 6, 4, 5, 16, 7, 12, 20, 24
<i>Euastrum evolutum</i> (Nordstedt) West and G.S.West	6, 7, 12, 16, 20, 22, 24
<i>Euastrum gemmatum</i> Ralfs	22, 7, 12, 6, 24
<i>Euastrum informe</i> Borge	6, 12
<i>Euastrum intermedium</i> Cleve	6, 12
<i>Euastrum laticerps</i> Nordstedt	6, 5, 12
<i>Euastrum malmei</i> Borge	5, 12
<i>Euastrum obesum</i> Joshua	22
<i>Euastrum pectinatum</i> Ralfs	16, 20
<i>Euastrum platycerum</i> Reinsch	20
<i>Euastrum rectangulare</i> Fritsch and Rich	17, 7, 24
<i>Euastrum sinuosum</i> Lenormand	6, 12
<i>Euastrum suboculatum</i> Borge	5, 12
<i>Euastrum trapezicum</i> Börgesen	4, 12
<i>Euastrum verrucosum</i> Ehrenberg ex Ralfs	7
<i>Docidium baculum</i> Brébisson ex Ralfs	7
<i>Groenbladia neglecta</i> (Raciborski) Teiling	21
<i>Groenbladia undulata</i> (Nordstedt) Kurt Förster	20
<i>Haplotaenium ehrenbergii</i>	22
<i>Haplotaenium minutum</i> (Ralfs) Bando	22
<i>Haplotaenium nodosum</i>	22
<i>Haplotaenium tridentulutum</i>	22
<i>Haplotaenium trabecula</i>	22
<i>Hyalotheca dissiliens</i> (Smith) Brébisson ex Ralfs	6, 22, 12, 23
<i>Hyalotheca dissiliens</i> (Smith) Brébisson ex Ralfs var. <i>dissiliens</i>	10, 24
<i>Hyalotheca dubia</i> Kützing ex Ralfs	22, 23
<i>Hyalotheca indica</i> Turner	22
<i>Hyalotheca mucosa</i> Ralfs	21, 6, 12
<i>Hyalotheca undulata</i> Nordstedt	6, 12
<i>Micrasterias abrupta</i> West and G. S. West	7, 22
<i>Micrasterias aequilobata</i> Borge	5, 12
<i>Micrasterias apiculata</i> Meneghini ex Ralfs	21, 5, 12
<i>Micrasterias borgei</i> Krieger	22
<i>Micrasterias crenata</i> Brébisson ex Ralfs	4, 12
<i>Micrasterias crux-melitensis</i> (Ehrenberg) Trevisan	21, 5
<i>Micrasterias decemdentata</i> (Nägeli) Archer	5, 12
<i>Micrasterias denticulata</i> Brébisson ex Ralfs	21
<i>Micrasterias depauperata</i> Nordstedt	12, 5
<i>Micrasterias foliacea</i> Bailey ex Ralfs	22
<i>Micrasterias furcata</i> Agardh ex Ralfs	4, 5, 7, 12, 22, 24
<i>Micrasterias galeata</i> Borge	5, 12
<i>Micrasterias incisa</i> (Brébisson) ex Ralfs	7
<i>Micrasterias integra</i> Nordstedt	5, 12
<i>Micrasterias laticeps</i> Nordstedt	4, 5, 22, 12
<i>Micrasterias laticeps</i> Nordstedt var. <i>acuminata</i> Krieger	7, 4, 24
<i>Micrasterias mahabuleshwariensis</i> Hobson	5, 6, 7, 12, 22, 24
<i>Micrasterias ornamentalis</i> (Löfgreen and Nordstedt) Borge	5, 12
<i>Micrasterias pinnatifida</i> (Kützing) Ralfs	6, 12, 24
<i>Micrasterias radiata</i> West and G.S.West	22, 12, 6
<i>Micrasterias radiosa</i> Ralfs	5, 22
<i>Micrasterias ringens</i> Bailey	7,2
<i>Micrasterias rotata</i> Ralfs	5
<i>Micrasterias sol</i> (Ehrenberg) Kützing	6, 12



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Micrasterias thomasiana</i> Archer	21
<i>Micrasterias torreyi</i> Bailey ex Ralfs	22
<i>Micrasterias tropica</i> Nordstedt	22
<i>Micrasterias truncata</i> Ralfs	17, 5, 7, 24
<i>Onychonema filiformis</i> (Ehrenberg) Roy and Bisset	7, 13
<i>Onychonema laeve</i> Nordstedt	6, 12
<i>Onychonema laeve</i> Nordstedt var. <i>latum</i> West and G.S. West	7, 13, 16, 10, 22, 24
<i>Phymatodocis alternans</i> Nordstedt	10, 6, 12
<i>Phymatodocis irregulare</i> Schmidle	6, 12
<i>Phymatodocis nordstedtiana</i> Wolle	6
<i>Pleurotaeniopsis meyeri</i> Schmidle	4, 12
<i>Pleurotaeniopsis pseudoconnata</i> (Nordstedt) Lagerheim	12
<i>Pleurotaenium baculoides</i> (Roy and Bisset) Playfair	7
<i>Pleurotaenium caldense</i> Nordstedt	6, 12
<i>Pleurotaenium clavatum</i> (Kützing) De Bary	4, 12
<i>Pleurotaenium coroniferum</i> (Borge) Krieger	7
<i>Pleurotaenium cuyabense</i> Borge	5, 12
<i>Pleurotaenium cylindricum</i> (Turner) Schmidle	7
<i>Pleurotaenium ehrenbergii</i> (Brébisson) De Bary	7, 21
<i>Pleurotaenium ehrenbergii</i> var. <i>undulatum</i> Schaarschmidt	5, 6, 12, 24
<i>Pleurotaenium laevigatum</i> Borge	5, 12
<i>Pleurotaenium maskellii</i> Suxena and Venkateswarlu	7
<i>Pleurotaenium maximum</i> (Reinsch) Lundell	6, 5, 12
<i>Pleurotaenium minutum</i> (Ralfs) Hilse	21, 23, 20
<i>Pleurotaenium nodosum</i> (Bailey) Lundell	5
<i>Pleurotaenium nodulosum</i> (Brébisson) De Bary	6, 12, 20
<i>Pleurotaenium ovatum</i> Nordstedt	6, 12, 20
<i>Pleurotaenium rectum</i> Delponte	4, 12
<i>Pleurotaenium stuhlmannii</i> (Hieronimus) Schmidle	6, 12
<i>Pleurotaenium subalternans</i> Borge	7
<i>Pleurotaenium subcoronulatum</i> (Turner) West and G.S. West	6, 12
<i>Pleurotaenium subundulatum</i> Borge	6, 12
<i>Pleurotaenium trabecula</i> (Ehrenberg) Nägeli	6, 7, 12, 16, 20
<i>Pleurotaenium tridentulum</i> (Wolle) W. West	21
<i>Pleurotaenium verrucosum</i> (Bailey) Lundell	21, 6, 12
<i>Sphaerososma aubertianum</i> West	21
<i>Sphaerososma wallichii</i> J.Jacobsen	6, 12
<i>Spondylosium desmidiiforme</i> (Borge) G.S. West	10
<i>Spondylosium ellipticum</i> West and G.S. West	16, 7, 13, 20
<i>Spondylosium panduriforme</i> (Heimerl) Teiling	22
<i>Spondylosium planum</i> (Wolle) West and G.S. West	16, 17, 10, 20
<i>Spondylosium pulchellum</i> (Archer) Archer	22
<i>Spondylosium pulchrum</i> (Bailey) Archer	22, 20
<i>Spondylosium pygmaeum</i> Cooke	17
<i>Staurastrum apiculatum</i> Brébisson	6, 12
<i>Staurastrum arctiscon</i> (Ehrenberg) Lundell	16, 7
<i>Staurastrum asteroideum</i> West and G.S. West	21
<i>Staurastrum bidentulum</i> Grönblad	22
<i>Staurastrum boergesenii</i> Raciborski	22
<i>Staurastrum brasiliense</i> Nordstedt	6, 22, 12
<i>Staurastrum ceratophorum</i> Nordstedt	6, 12
<i>Staurastrum claviferum</i> West and G.S. West	7
<i>Staurastrum clepsydra</i> Nordstedt	6, 12
<i>Staurastrum contectum</i> Turner	6, 12
<i>Staurastrum cosmarioides</i> Nordstedt	5, 12
<i>Staurastrum curvatum</i> West	17
<i>Staurastrum cuspidatum</i> Brébisson	23
<i>Staurastrum dejectum</i> Brébisson	6, 12
<i>Staurastrum dickiei</i> Ralfs	6, 12



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Staurastrum disputatum</i> West and G.S.West	7
<i>Staurastrum elegantissimum</i> Johnson	21
<i>Staurastrum gemelliparum</i> Nordstedt	6, 12
<i>Staurastrum hoehnei</i> Borge	6, 12
<i>Staurastrum inconspicuum</i> Nordstedt	6, 12, 24
<i>Staurastrum johnsonii</i> West and G.S.West	17
<i>Staurastrum leptacanthum</i> Nordstedt	22
<i>Staurastrum leptocladum</i> Johnson	6, 12, 16, 17, 19, 22, 23, 24
<i>Staurastrum margaritaceum</i> Meneghini ex Ralfs	4, 6, 12, 22, 24
<i>Staurastrum minnesotense</i> Wolle	22
<i>Staurastrum muticum</i> Brébisson	5, 6, 7, 12, 20, 24
<i>Staurastrum nudibrachiatum</i> Borge	7, 6, 22, 12
<i>Staurastrum obductum</i> Borge	6, 12
<i>Staurastrum orbiculare</i> Ralfs	5, 6, 7, 12, 24
<i>Staurastrum paradoxum</i> Meyen ex Ralfs	23
<i>Staurastrum pilgeri</i> Schmidle	4, 12
<i>Staurastrum pinnatum</i> Turner	22
<i>Staurastrum pseudosebaldi</i> Wille	6, 12
<i>Staurastrum pseudotetracerum</i> (Nordstedt) West and G.S.West	22
<i>Staurastrum quadrangulare</i> Brébisson	22
<i>Staurastrum rotula</i> Nordstedt	7, 6, 22, 12, 23
<i>Staurastrum sagittiferum</i> Börgesen	6, 12
<i>Staurastrum saxonicum</i> Bulnheim	6, 12
<i>Staurastrum sebaldii</i> Reinsch	22
<i>Staurastrum setigerum</i> Cleve	19, 6, 22, 12
<i>Staurastrum setigerum</i> Cleve var. <i>subvillosum</i> Grönblad	7, 16, 24
<i>Staurastrum sexangulare</i> (Bulnheim) Lundell	22
<i>Staurastrum stelliferum</i> Borge	6, 12
<i>Staurastrum striolatum</i> (Nägeli) Archer	7
<i>Staurastrum subcornutum</i> De Toni	6, 12
<i>Staurastrum subdentatum</i> W. and G. S. West	17
<i>Staurastrum subophiura</i> Borge	6, 12
<i>Staurastrum subtelliferum</i> Roy and Biss	5, 12, 7
<i>Staurastrum tectum</i> Borge	6, 12
<i>Staurastrum tetracerum</i> Ralfs ex Ralfs	6, 22, 12, 24
<i>Staurastrum tohopekaligense</i> Wolle	16
<i>Staurastrum trachytithophorum</i> West and G.S.West	7
<i>Staurastrum trifidum</i> Nordstedt	5, 6, 7, 12, 16, 22, 20, 23, 24
<i>Staurastrum trihedrale</i> Wolle	6, 12
<i>Staurastrum wolleanum</i> Butler	7
<i>Staurodesmus clepsydra</i> (Nordstedt) Teiling	22
<i>Staurodesmus convergens</i> (Ehrenberg ex Ralfs) Lilleroth	22
<i>Staurodesmus curvatus</i> (Turner) Thomasson	16, 7
<i>Staurodesmus dejectus</i> (Brébisson) Teiling	22
<i>Staurodesmus dickiei</i> (Ralfs) Lillieroth	21
<i>Staurodesmus glaber</i> (Ehrenberg) Teiling	24
<i>Staurodesmus lobatus</i> (Börgesen) Bourrelly	7, 22, 24
<i>Staurodesmus mamillatus</i> (Nordstedt) Teiling	22
<i>Staurodesmus maximus</i> (Borge) Teiling	7
<i>Staurodesmus megacanthus</i> (Lundell) Thunmark	22
<i>Staurodesmus subulatus</i> (Kützing) Thomasson	22, 23
<i>Staurodesmus triangularis</i> (Lagerheim) Teiling	17
<i>Staurodesmus validus</i> (West and G.S.West) Thomasson	7, 22, 24
<i>Teilingia granulata</i> (Roy and Bisset) Bourrelly	16, 7, 10, 13, 23, 20, 24
<i>Teilingia wallichii</i> (Jacobsen) Bourrelly	22
<i>Triploceras gracile</i> Bailey	6, 22, 12
<i>Xanthidium amazonense</i> Scott and Croasdale	22
<i>Xanthidium antilopaeum</i> (Brébisson) Kützing	6, 14, 7, 12, 23, 24
<i>Xanthidium antilopaeum</i> var. <i>hebridarum</i> West and G.S. West	24



TABLE 1. CONTINUED.

Phylum Chlorophyta A.Pascher, 1914	References
<i>Xanthidium controversum</i> West and G.S.West	6, 12
<i>Xanthidium cristatum</i> Brébisson ex Ralfs	22
<i>Xanthidium ornatum</i> Borge	12
<i>Xanthidium paraguayense</i> Borge	6, 12
<i>Xanthidium pseudoregulare</i> Borge	6, 5
<i>Xanthidium regulare</i> Nordstedt	6, 12
<i>Xanthidium sexangulare</i> Grönblad	22
<i>Xanthidium trilobum</i> Nordstedt	7, 14, 6, 22, 12, 24
Family Mesotaeniaceae	
<i>Ancylonema nordenskioldii</i> Berggren	21
<i>Mesotaenium mirificum</i> Archer	7
<i>Netrium digitus</i> (Brébisson) Itzigsohn and Rothe	6, 12, 23
<i>Netrium lamellosum</i> (Brébisson) Lütkemüller	6, 12
<i>Spirotaenia condensata</i> Brébisson	6, 12
Family Peniaceae	
<i>Gonatozygon aculeatum</i> Hastings	22, 12
<i>Gonatozygon kinahani</i> (Archer) Rabenhorst	21, 6, 12
<i>Gonatozygon monotaenium</i> De Bary	7, 21, 5, 22, 12
<i>Gonatozygon pilosum</i> Wolle	7, 21, 22, 23
<i>Penium conspersum</i> Wittrock	4, 12
<i>Penium cucurbitinum</i> Bisset	4, 12
<i>Penium cylindricum</i> Borge	6, 12
<i>Penium heimerlianum</i> Schmidle	4, 12
<i>Penium lamellosum</i> (Brébisson) Kützing	5, 12
<i>Penium libellula</i> (Focke) Nordstedt	5, 13
<i>Penium margaritaceum</i> (Ehrenberg) Brébisson	6, 12
<i>Penium minutissimum</i> Nordstedt	5
<i>Penium minutum</i> (Ralfs) Cleve	6, 12
<i>Penium naegelli</i> Brébisson	5, 12
<i>Penium navicula</i> Brébisson	4, 5, 12
<i>Penium oblongum</i> De Bary	5, 12
<i>Penium spirostriolatum</i> Barker	21
<i>Penium subspirostriolatiforme</i> Grönblad	17, 7
Family Zygnemataceae	
<i>Mougeotia abnormis</i> Kisselev	9
<i>Mougeotia delicata</i> Beck	23
<i>Mougeotia laetevirens</i> (Braun) Wittrock	8, 12
<i>Mougeotiopsis calospora</i> Palla	18
<i>Spirogyra fennica</i> Cedercreutz	9
<i>Spirogyra fuellebornei</i> Schmidle	8, 12
<i>Spirogyra hoehnei</i> Borge	6, 12
<i>Spirogyra irregularis</i> Nägeli ex Kützing	8, 12
<i>Spirogyra macrospora</i> (Rao) Krieger	8, 12
<i>Spirogyra majuscula</i> Kützing	6, 12
<i>Spirogyra malmeana</i> Hirn	12
<i>Spirogyra maxima</i> (Hassall) Wittrock	12
<i>Spirogyra minutifossa</i> Jao	9
<i>Spirogyra neglecta</i> (Hassall) Kützing	9, 8,12
<i>Spirogyra quadrilaminata</i> Jao	8, 12
<i>Zygnema insigne</i> Hassall	9
<i>Zygnema oveidanum</i> Transeau	9
<i>Zygogonium ericetorum</i> Kützing	8, 12
Family Not assigned	
<i>Selenodictyon brasiliense</i> Uherkovich and Schmidt ex Comas and Komárek	23

TABLE 2. Number of orders, families, genera and species by class of the Phylum Chlorophyta for the state of Mato Grosso, Brazil.

Classes	Orders	Families	Genera	Species
Charophyceae	2	2	3	3
Chlorophyceae	9	21	55	154
Klebsormidiophyceae	2	2	2	2
Mesostigmatophyceae	1	1	1	1
Trebouxiophyceae	3	3	4	9
Ulvophyceae	3	3	5	8
Zygnematophyceae	1	6	35	386
Total	21	38	105	563

LITERATURE CITED

Azevedo, K.S. 1996. *Estudo taxonômico das Desmídias (Chlorophyta, Zygnemaphyceae) do Lago Recreio Barão de Melgaço, Mato Grosso, Brasil*. Unpublished Undergraduate dissertation. Cuiabá: Universidade Federal de Mato Grosso. 75 p.

Bicudo, C.E.M. and M. Menezes. 2010. Algas do Brasil; p. 49-60. In R.C. Forzza, J.F. Baumgratz, C.E.M. Bicudo, A.A. Carvalho Jr., A. Costa, D.P. Costa, M. Hopkins, M.P. Leitman, L.G. Lohmann, L.C. Maia, G. Martinelli, M. Menezes, M.P. Morim, M.A.N. Coelho, A.L. Peixoto, J.R. Pirani, J. Prado, L.P. Queiroz, V.C. Souza, J.R. Stehmann, L.S. Sylvestre, B.M.T. Walter and D.C. Zappi (ed.). *Catálogo de Plantas e Fungos do Brasil 1*. Rio de Janeiro: Jardim Botânico do Rio de Janeiro.

Bohlin, K. 1897. Die Algen der Ersten Regnellschen Expedition, I. Protococcoideen. *Bihang till K. Svenska Vetenskaps Akademiens Handlingar* 23 (7): 1-47.

Borge, O. 1903. Die algen der Ersten Regnellschen Expedition, II. Desmidiaceen. *Arkiv för Botanik* 1: 71-138.

Borge, O. 1925. Die Von Dr. F.C. Hoehseewährend der Expedition Roosevelt-Rondon gesammelten Süßwasseralgen. *Arkiv för Botanik* 17 (19): 1-56.

Braun, A. and C.F.O. Nordstedt. 1883. Fragmente einer Monographie der Characcen Nach den hinterlassenen Manuscripten. A. Braun's, herausgegeben von Dr. Otto Nordstedt. *Abhandlungen der Königinen Akademie der Wissenschaftlichen Berlin* 1882:1-211.

Camargo, J.C., S.M. Loverde-Oliveira, M.G. Sophia and F.M.B. Nogueira. 2009. Desmídias perifíticas da Baía do Coqueiro, Pantanal Matogrossense. *Iheringia. Série Botânica*, 64(2): 25-41.

De-Lamônica-Freire, E.M. 1985. *Desmidioflórula da Estação Ecológica da Ilha de Taiamã, município de Cáceres, Mato Grosso*. Unpublished Ph.D. thesis. São Paulo: Universidade de São Paulo. 538 p.

De-Lamônica-Freire, E.M. 1989a. Catálogo das algas referidas para o Estado de Mato Grosso, Brasil, 1. *Revista Brasileira de Biologia* 49 (3): 671-677.

De-Lamônica-Freire, E.M. 1989b. Catálogo das algas referidas para o Estado de Mato Grosso, Brasil, 2. *Revista Brasileira de Biologia* 49 (3): 679-689.

De-Lamônica-Freire, E.M. 1992a. Desmídias filamentosas (Zygnemaphyceae, Desmidiales) da Estação Ecológica da Ilha de Taiamã, Mato Grosso, Brasil. *Acta Limnologica Brasiliensia* IV: 315-325.

De-Lamônica-Freire, E.M. 1992b. O gênero *Xanthidium* (Zygnemaphyceae, Desmidiales) na Estação Ecológica na Ilha de Taiamã, Mato Grosso, Brasil. *Boletim do Instituto de Biociências Universidade Federal de Mato Grosso* 1: 1-9.

De-Lamônica-Freire, E.M. and C.L. Sant'Anna. 1993. Chlorococcales (Chlorophyceae) da Estação Ecológica da Ilha Taiamã, Estado de Mato Grosso. *Hoehnea* 20 (1/2): 107-118.

Dias, I.C.A. 1986. Zygnemaceae (Zygnemaphyceae) da Chapada dos Guimarães e arredores, Mato Grosso, Brasil: Uma contribuição ao seu conhecimento. *Rickia* 13: 69-75.

Dias, I.C.A. 1989. Chlorophyta filamentosas do município de Cáceres e arredores, Mato Grosso, Brasil: uma contribuição ao seu conhecimento. *Acta Botanica Brasiliense* 3(2): 3-12.

Figueiredo, D.M. 2007. *Padrões limnológicos e do fitoplâncton nas fases de enchimento e de estabilização dos reservatórios do APM Manso e AHE Jauru (Estado de Mato Grosso)*. Unpublished Ph.D. thesis. São Carlos: Universidade Federal de São Carlos. 270 p.

Heckman, C.W., E.L. Hardoim, S.A. Ferreira and A.U. Kretzschmar. 1993. Preliminary observations on some cosmopolitan algae in ephemeral water bodies of the Pantanal, Mato Grosso, Brazil; p. 279-292. In B. Gopal, A. Hillbricht-Ilkowska and R.G. Wetzel (ed.). *Wetlands and Ecotones: Studies on Land-water Interactions*. New Delhi: National Institute of Ecology/International Scientific Publications.

Hirn, K.E. 1900. Monographie und Iconographie der Oedogoniaceen. *Acta Societatis Scientiarum Fennicae* 27 (1): 1-394. Pl. 1-64.

Junk, W.J., C. Nunes-da-Cunha, K.M. Wantzen, P. Petermann, C. Strüssmann, M.I. Marques and J. Adis. 2006. Biodiversity and its conservation in the Pantanal of Mato Grosso, Brazil. *Aquatic Sciences* 68: 278-309.

Loverde-Oliveira, S.M. 1999. *Variáveis limnológicas e análise temporal da comunidade fitoplanctônica da Baía Sá Mariana, Pantanal de Barão de Melgaço, MT*. Unpublished M.Sc. dissertation. Cuiabá: Universidade Federal de Mato Grosso, Cuiabá. 84 p.

Loverde-Oliveira, S.M. and D.M. Figueiredo. 2009. Caracterização das comunidades de fitoplâncton e zooplâncton; p. 95-101. In D.M. Figueiredo and F.X.T. Salomão (org.). *Bacia do rio Cuiabá - uma abordagem socioambiental*. Cuiabá: Entrelinhas/EdUFMT.

Loverde-Oliveira, S.M., M. Adler and V.P. Silva. 2011. Phytoplankton, periphyton and metaphyton of the Pantanal floodplains: species composition and richness, density, biomass and primary production; p. 235-256. In W. Junk, C. Silva, C. Cunha and K. Wantzen (org.). *The Pantanal Ecology, biodiversity and sustainable management of a large neotropical seasonal wetland*. Sofia: Pensoft Publishers.

Marçal, S.F. 2005. *Variação espacial e sazonal da abundância relativa do fitoplâncton na baía do Coqueiro (Pantanal de Poconé, Mato Grosso, Brasil)*. Unpublished Undergraduate dissertation. Cuiabá: Universidade Federal de Mato Grosso. 53 p.

Messias, O.M.S. 2002. *Utilização de indicadores na avaliação da qualidade de água de ecossistema aquático lótico de Mato Grosso - Rio Cuiabá*. Unpublished M.Sc. dissertation. Cuiabá: Universidade Federal de Mato Grosso. 52 p.

Ruggiero, M., D. Gordon, N. Bailly, P. Kirk and D. Nicolson. 2011. The Catalogue of Life Taxonomic Classification 2, Part A. In F.A. Bisby, Y.R. Roskov, T.M. Orrell, D. Nicolson, L.E. Paglinawan, N. Bailly, P.M. Kirk, T. Bourgoin, G. Baillargeon and D. Ouvrard (ed.). *Species 2000 and ITIS Catalogue of Life: 2011 Annual Checklist*. DVD; Reading: Species 2000.

Schmidle, W. 1901. Algen aus Brasilien. *Hedwigia Dresden* 40(1): 45-54.

Schults, F.P. 1993. *Flórula de desmídias (Chlorophyta, Zygnemaphyceae) do Pantanal de Poconé, Mato Grosso, Brasil*. Unpublished Undergraduate dissertation. Cuiabá: Universidade Federal de Mato Grosso. 55 p.

Schults, F.P. 1998. *Ficoflórula do Rio Coxipó e as condições limnológicas nas proximidades do Bairro dos Ipês, município de Cuiabá, Estado de Mato Grosso*. Unpublished M.Sc. dissertation. Cuiabá: Universidade Federal de Mato Grosso. 92 p.

Schults, F.P. and E.M. De-Lamônica Freire. 2000. Desmídias (Chlorophyta, Zygnemaphyceae) do Pantanal de Poconé, Mato Grosso, Brasil. *Diversidades* 1: 111-123.

Severiano, J.S., A.N. Moura, H.S.B. Oliveira, M.K. Cordeiro-Araújo and E.W. Dantas. 2012. Micro-phytoplankton richness in Contas river, state of Bahia, northeastern Brazil. *Check List* 8(2): 218-223.

Sophia, M.G. and L.H.S. Silva. 1989. Considerações sobre a ficoflórula de Desmídias filamentosas (Zygnemaphyceae) do Noroeste de Mato Grosso e Sudeste de Rondônia, Brasil. *Revista Brasileira de Biologia* 49(4): 943-956.

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